



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/586,633	09/25/2006	Steinar Bjornstad	OSL-038	6061
3897 7590 12/29/2011 SCHNECK & SCHNECK P.O. BOX 2-E SAN JOSE, CA 95109-0005			EXAMINER AGA, SORI A	
			ART UNIT 2476	PAPER NUMBER
			MAIL DATE 12/20/2011	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary**Application No.**

10/586,633

Applicant(s)

BJORNSTAD, STEINAR

Examiner

SORI AGA

Art Unit

2476

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 October 2011.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.
- 4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 5) ☒ Claim(s) 22-39 is/are pending in the application.
- 5a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 6) ☐ Claim(s) ____ is/are allowed.
- 7) ☒ Claim(s) 22, 25-31 and 34-39 is/are rejected.
- 8) ☒ Claim(s) 23, 24, 32 and 33 is/are objected to.
- 9) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 10) ☐ The specification is objected to by the Examiner.
- 11) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 12) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB-08)
Paper No(s)/Mail Date ____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date ____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____

DETAILED ACTION

Response to Amendment

1. Applicant's request for reconsideration mailed 10/04/2011 have been entered and carefully considered.
2. Applicant has not amended, cancelled and/or added any claims. Claims 1-21 had previously been cancelled. Claims 22-39 remain pending.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
5. Claims 22, 27-31, and 36-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al.(US PG-PUB 2004/0151171 A1) (herein after Lee) in view of Rychlicki (US PGPUB 2003/0020982 A1) (herein after Rychlicki).

Regarding claim 22, Lee teaches an optical switch for use in an asynchronous, wavelength-division-multiplexing, fiber-optic communication network, wherein the optical switch comprises: at least one fiber-optic input; at least one fiber-optic output; and a buffer unit comprising a plurality of queues, wherein the optical switch is arranged to: receive data packets at the fiber-optic input; assign a received data packet, having an associated destination, to one of the queues; determine the number of vacant output wavelengths for the destination; and schedule the data packet from the queue [see fig. 2 and paragraph 0037 where a large capacity optical router including an optical switch is showing having N input ports 1 to N (a plurality of fiber optic inputs); and N output ports (a plurality of fiber optic outputs); where the inputs and outputs are shown as wavelength-lambda (fiber optic). See also paragraph 0038 lines 1-6 where the input/outputs are shown as WDM (wavelength division multiplexed); See figure 2 and paragraph 0060 lines 19-24 where an a large capacity optical router including an optical switch is shown and where a determination is made to determine whether an available wavelength channel (at least one) exists and if there is no available wavelength channel, the data frame waits in the buffer; see also paragraph 0041 where a buffer and the queues are shown].

However, Lee does not explicitly teach (scheduling when) only when at least a minimum number, greater than one, of output wavelengths for the destination are vacant. However, Rychlicki teaches determining and waiting until a number of wavelengths are available (i.e more than one) [see paragraphs 0163 and 0164]. It would have been obvious for a person having ordinary skill in the art to schedule only when at least a minimum number,

greater than one, of output wavelengths for the destination are vacant in order to provide a communication that does not limit the speed or bit rate of the communication (see paragraph 0015).

Regarding claim 27, Lee teaches the optical switch of claim 22, further adapted to operate within a network selected from the group consisting of: an optical packet switched network; an optical burst switched network; an electronic packet switched network; an electronic burst switched network; and a wavelength-division-multiplexed network [See also paragraph 0038 lines 1-6 where the input/outputs are shown as **WDM (wavelength division multiplexed)**]. *(note that the list within the group are claimed alternatively and therefore a showing of one of the elements meets the requirements of the claim).*

Regarding claim 28, Lee teaches the optical switch of claim 22, wherein the buffer unit comprises an electronic buffer and is configured to buffer data packets electronically [see paragraph 0019 line 6 where the buffer is shown to be an electronic buffer].

Regarding claim 29, Lee teaches the optical switch of claim 22, configured to receive wavelength-division- multiplexed signals at the fibre-optic input [See also paragraph 0038 lines 1-6 where the input are shown as **WDM (wavelength division multiplexed)**].

Regarding claim 30, Lee teaches the optical switch of claim 22, configured to send wavelength-division- multiplexed signals from the fibre-optic output [See also paragraph 0038 lines 1-6 where the outputs are shown as WDM (wavelength division multiplexed)].

Regarding claim 31, Lee teaches a method of switching data in an asynchronous, wavelength-division- multiplexing, fiber-optic communication network, comprising: receiving data packets at a fiber-optic input of an optical switch; assigning a received data packet, having an associated destination, to one of a plurality of queues in a buffer unit determining the number of vacant output wavelengths from the optical switch for the destination; and scheduling the data packet from the queue [see fig. 2 and paragraph 0037 where a large capacity optical router including an optical switch is showing having N input ports 1 to N (a plurality of fiber optic inputs); and N output ports (a plurality of fiber optic outputs); where the inputs and outputs are shown as wavelength-lambda (fiber optic). See also paragraph 0038 lines 1-6 where the input/outputs are shown as WDM (wavelength division multiplexed); See figure 2 and paragraph 0060 lines 19-24 where an a large capacity optical router including an optical switch is shown and where a determination is made to determine whether an available wavelength channel (at least one) exists and if there is no available wavelength channel, the data frame waits in the buffer; see also paragraph 0041 where a buffer and the queues are shown].

However, Lee does not explicitly teach (scheduling when) only when at least a minimum number, greater than one, of output wavelengths for the destination are vacant. However, Rychlicki teaches determining and waiting until a number of wavelengths are available (i.e more than one) [see paragraphs 0163 and 0164]. It would have been obvious for a person having ordinary skill in the art to schedule only when at least a minimum number, greater than one, of output wavelengths for the destination are vacant in order to provide a communication that does not limit the speed or bit rate of the communication (see paragraph 0015).

Regarding claim 36, Lee teaches the method of claim 31, wherein the network is a network selected from the group consisting of: an optical packet switched network; an optical burst switched network; an electronic packet switched network; an electronic burst switched network; and a wavelength-division-multiplexed network [See also **paragraph 0038 lines 1-6 where the input/outputs are shown as WDM (wavelength division multiplexed)**]. *(note that the list within the group are claimed alternatively and therefore a showing of one of the elements meets the requirements of the claim).*

Regarding claim 37, Lee teaches the method of claim 31, wherein the buffer unit comprises an electronic buffer, the method further comprising buffering data packets electronically in the buffer unit [see **paragraph 0019 line 6 where the buffer is shown to be an electronic buffer**].

Regarding claim 38, Lee teaches the method of claim 31, further comprising receiving wavelength-division- multiplexed signals at the fibre-optic input [See also **paragraph 0038 lines 1-6 where the input are shown as WDM (wavelength division multiplexed)**].

Regarding claim 39, Lee teaches the method of claim 31, further comprising sending wavelength-division- multiplexed signals from the fibre-optic output [See also **paragraph 0038 lines 1-6 where the outputs are shown as WDM (wavelength division multiplexed)**].

6. Claims 25 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee and Rychlicki as applied to claims 22, 27-31, and 36-39 above, and further in view of Shiimoto (US PG PUB 20030128981 A1) (herein after Shiimoto).

Regarding claim 25, Lee teaches the optical switch of claim 22 as discussed above. However, Lee does not explicitly teach buffering only a fraction of the data packets passing through the optical switch. However, Shiimoto teaches transferring some optical data without converting them to electrical signal (i.e. without having to use the electrical buffers claimed in Lee) [see **paragraph 0426**]. It would have been obvious for a person having ordinary skill in the art to buffer only a fraction of the data packets passing through the optical switch. This is desirable because it provides for performing burst data transfer at high efficiency (see paragraph 0019).

Regarding claim 34, Lee teaches the method of claim 31 as discussed above. However, Lee does not explicitly teach buffering only a fraction of the data packets passing through the optical switch. However, Shiomoto teaches transferring some optical data without converting them to electrical signal (i.e. without having to use the electrical buffers claimed in Lee) [see **paragraph 0426**]. It would have been obvious for a person having ordinary skill in the art to buffer only a fraction of the data packets passing through the optical switch. This is desirable because it provides for performing burst data transfer at high efficiency (see paragraph 0019).

7. Claims 26 and 35 rejected under 35 U.S.C. 103(a) as being unpatentable over Lee and Rychlicki as applied to claims 22, 27-31, and 36-39 above, and further in view of LoCascio et al. (US PG PUB (US 20020196497 A1) (herein after LoCascio).

Regarding claim 26, Lee teaches the optical switch of claim 22 as discussed above. However, Lee does not explicitly teach a plurality of fiber-optic inputs and at least one fiber-optic output which operates at a higher bit-rate than the plurality of fiber-optic inputs. However, LoCascio teaches one fiber-optic output which operates at a higher bit-rate than the plurality of fiber-optic inputs [see **paragraph 0025**]. It would have been obvious for a person having ordinary skill in the art to have one fiber-optic output which operates at a higher bit-rate than the plurality of fiber-optic inputs. This is desirable because it allows to combine and fit bits of multiple input into an output (see paragraph 0025).

Regarding claim 35, Lee teaches the method of claim 31 as discussed above. However, Lee does not explicitly teach a plurality of fiber-optic inputs and at least one fiber-optic output which operates at a higher bit-rate than the plurality of fiber- optic inputs. However, LoCascio teaches one fiber-optic output which operates at a higher bit-rate than the plurality of fiber- optic inputs [see **paragraph 0025**]. It would have been obvious for a person having ordinary skill in the art to have one fiber-optic output which operates at a higher bit-rate than the plurality of fiber- optic inputs. This is desirable because it allows to combine and fit bits of multiple input into an output (see paragraph 0025).

Allowable Subject Matter

8. Claims 23, 24, 32 and 33 remain objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

9. Applicant's arguments with respect to claims 22-39 have been carefully considered but are not persuasive.

10. Applicant has argued that neither Rychlicki nor Lee teach "schedule the data packet form the queue only when at least a minimum number, greater than one, of output wavelengths for the destination are vacant" (see applicant's remarks page 2 second paragraph). To Support said argument, applicant asserts that a person having ordinary skill in the art would not think to apply

a path-establishment steps of Rychlicki to the optical router of Lee (see applicant's remarks page 2 last two lines and page 3 first and second paragraphs). Examiner respectfully disagrees with applicant's assertions.

11. The problems being solved by the Rychlicki reference and Lee are in the same field of endeavor (optical communication). A person having ordinary skill in the art (and having knowledge of Rychlicki) would try to solve the problem in Lee (scheduling communication packets) using the same method (i.e. evaluating and determining whether there are available wavelengths). In other words, since, both references are in the same field of endeavor, it would be apparent for a person having ordinary skill in the art to at least consider using the methods used in one of the references in the other.

12. Similarly, examiner respectfully disagrees with applicant's assertion that Rychlicki does not teach wavelengths "greater than one" because Rychlicki's wavelengths are "one for transmit" and "one for receive" (see applicant's remarks page 3 last paragraph and page 4 first paragraph).

13. However, it should be noted that Rychlicki teaches that the method includes checking to see if each of the requesting and destination access devices have or two available unreserved wavelengths (see paragraph 0164). In other words, two at the requesting and two at the destination devices. Rychlicki therefore teaches that at least two 'outgoing' wavelengths be available (that is one at the requesting and one at the destination).

14. The rejections of dependent claims 25-30 and 34-39 are maintained for the same reasons as above.

Conclusion

15. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SORI AGA whose telephone number is (571)270-1868. The examiner can normally be reached on M-F 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ayaz R. Sheikh can be reached on (571)272-3795. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Sori A Aga/
Examiner, Art Unit 2476

/Phirin Sam/
Primary Examiner, Art Unit 2476